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L6: Entry 11 of 14

File: USPT

Dec 16, 1997

US-PAT-NO: 5698220

DOCUMENT-IDENTIFIER: US 5698220 A

TITLE: Asymmetric membranes in delivery devices

DATE-ISSUED: December 16, 1997

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
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Herbig; Scott M.	Bend	OR		
Korsmeyer; Richard W.	East Lyme	CT		
Lo; Jeelin	Old Lyme	CT		
Smith; Kelly L.	Bend	OR		
Thombre; Avinash G.	Gales Ferry	CT		

US-CL-CURRENT: [424/451](#), [424/461](#), [424/463](#), [424/464](#), [424/480](#), [424/489](#), [424/494](#), [424/495](#)

CLAIMS:

We claim:

1. A device for the controlled release of one or more active substances into an environment of use, said device comprising a core of said active substance or substances, with or without one or more excipients, surrounded by one or more asymmetric membranes, said asymmetric membrane comprising a thick, porous region which supports a dense, thin region.

2. A device of claim 1, wherein the membrane is permeable and imperforate and wherein the asymmetric membrane controls the release of the active substance or substances from the device.

3. A device of claim 1, wherein the membrane is permeable and perforate and wherein the asymmetric membrane controls the release of the active substance or substances from the device.

4. A device of claim 2, wherein the release is substantially osmotic pumping.

5. A device of claim 2, wherein the release is substantially diffusion.
6. A device of claim 3, wherein the release is substantially osmotic pumping.
7. A device of claim 3, wherein the release is substantially diffusion.
8. A device of claim 1, wherein the asymmetric membrane is a cellulose ester or ethyl cellulose.
9. A device of claim 1, wherein said substance or substances are biologically active.
10. A device of claim 1, which is a tablet.
11. A device of claim 1, which is a capsule.
12. A device of claim 1, which is a bead.
13. A device of claim 1, wherein the membrane is semipermeable and imperforate.
14. A device of claim 13, wherein the release is substantially osmotic pumping.
15. A device of claim 14, which is a capsule, tablet or bead.
16. A tablet, capsule or bead for administration to an animal which releases one or more pharmaceutically active substances into said animal which comprises a core of said active substance or substances, with or without one-or more pharmaceutically acceptable excipients, said core being surrounded by one or more asymmetric membranes, said asymmetric membrane comprising a thick, porous region which supports a dense, thin region.
17. A tablet, capsule or bead of claim 16, wherein the administration is oral and the release is into the fluid of the gastrointestinal tract of said animal and wherein the asymmetric membrane controls the release of the active substance or substances from the device.
18. A tablet, capsule or bead of claim 17, wherein the

substance is an antihypertensive.

19. A tablet, capsule or bead of claim 18, wherein the substance as prazosin.

20. A tablet, capsule or bead of claim 18, wherein the substance is nifedipine.

21. A tablet, capsule or bead of claim 18, wherein the substance as trimazosin.

22. A tablet, capsule or bead of claim 18, wherein the substance as doxazosin.

23. A tablet, capsule or bead of claim 17, wherein the substance as an antianxiety agent.

24. A tablet, capsule or bead of claim 23, wherein the substance is hydroxyzine.

25. A tablet, capsule or bead of claim 23, wherein the substance as sertraline.

26. A tablet, capsule or bead of claim 17, wherein the substance as an anticlotting agent.

27. A tablet, capsule or bead of claim 26, wherein the substance is dazmegrel.

28. A tablet, capsule or bead of claim 17, wherein the substance is a blood-glucose lowering agent.

29. A tablet, capsule or bead of claim 28, wherein the substance is glipizide.

30. A tablet, capsule or bead of claim 17, wherein the substance is a decongestant, an antihistamine or cough or cold agent.

31. A tablet, capsule or bead of claim 30, wherein the substance is brompheniramine maleate.

32. A tablet, capsule or bead of claim 30, wherein the substance is chlorpheniramine maleate.

33. A tablet, capsule or bead of claim 30, wherein the

substance is phenylephrine hydrochloride.

34. A tablet, capsule or bead of claim 30, wherein the substance is pseudoephedrine hydrochloride.

35. A tablet, capsule or bead of claim 30, wherein the substance is cetirizine.

36. A tablet, capsule or bead of claim 30, wherein the substance is dexbrompheniramine maleate.

37. A method for releasing one or more active substance or substances into an environment of use which comprises placing in said environment a device containing said active substance or substances surrounded by one or more asymmetric membranes, said asymmetric membrane comprising a thick, porous region which supports a dense, thin region.

38. A method of claim 37, wherein the device is a tablet, capsule or bead.

39. A method of claim 38, wherein the asymmetric membrane is permeable and imperforate or perforate and wherein the asymmetric membrane controls the release of the active substance or substances from the device.

40. A method of claim 39, wherein the releasing is substantially diffusion.

41. A method of claim 39, wherein the releasing is substantially osmotic pumping.

42. A method of claim 38, wherein the asymmetric membrane is semipermeable and imperforate.

43. A method of claim 42, wherein the releasing is substantially osmotic pumping.

44. A capsule device for the controlled release of one or more active substances into an environment of use, said device comprising a core of said active substance or substances, with or without excipients, enclosed in a capsule the top or bottom of which is comprised of one or more asymmetric membranes, said asymmetric membrane comprising a thick, porous region which supports a dense,

thin region.

45. A device of claim 44, wherein the membrane is permeable and perforate or imperforate and wherein the asymmetric membrane controls the release of the active substance or substances from the device.

46. A device of claim 45, wherein the release is by osmotic pumping.

47. A device of claim 6 wherein the active substance is pseudoephedrine hydrochloride.

48. A device of claim 47 wherein the asymmetric membrane comprises a cellulose acetate and a glycol.

49. A device of claim 6 wherein the active substance is sertraline.

50. A device of claim 49 wherein the asymmetric membrane comprises a cellulose acetate and a glycol.

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Smith; Kelly L.	Bend	OR		
Thombre; Avinash G.	Gales Ferry	CT		

ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
Pfizer Inc.	New York	NY			02

APPL-NO: 08/ 462473 [PALM]

DATE FILED: June 5, 1995

PARENT-CASE:

This application is a divisional of U.S. application Ser. No. 07/951,931 filed on Sep. 25, 1992 now U.S. Pat. No. 5,612,059 which is a continuation of application Ser. No. 07/391,741 filed on Aug. 9, 1989, now abandoned, which was a continuation-in-part of application Ser. No. 07/238,371 filed on Aug. 30, 1988, now abandoned. The priority of all such applications is hereby claimed.

INT-CL: [06] A61 K 9/62, A61 K 9/36

US-CL-ISSUED: 424/451; 424/461, 424/463, 424/464, 424/480, 424/489, 424/494, 424/495

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FIELD-OF-SEARCH: 424/451, 424/463, 424/461, 424/464, 424/480, 424/489, 424/494, 424/495

PRIOR-ART-DISCLOSED:

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Search Selected

Search ALL

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R. E. Kesting "Synthetic Polymeric Membranes", Wiley-Interscience, 2nd Ed., 1985. (Chapter 7) Remington's Pharmaceutical Science, pp. 1633-1639 (1988) .

ART-UNIT: 152

PRIMARY-EXAMINER: Venkat; Jyothisan

ABSTRACT:

A device for controlled release of an active substance through one or more asymmetric membranes by diffusion and/or osmotic pumping.

50 Claims, 44 Drawing figures